

CoE197s

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Exercise 1: Changing Images

1) Getting setup

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker pull ubuntu:16.04
16.04: Pulling from library/ubuntu
Digest: sha256:eed7e1076bbc1f342c4474c718e5438af4784f59a4e88ad687dbb98483b59ee4
Status: Image is up to date for ubuntu:16.04
docker.io/library/ubuntu:16.04

C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker images
REPOSITORY              TAG          IMAGE ID       CREATED        SIZE
seancabalse/docker101tutorial  latest      ed92b27e7580   About an hour ago   28MB
docker101tutorial          latest      ed92b27e7580   About an hour ago   28MB
alpine/git                latest      2abeafddf5b9   3 days ago         25.1MB
ubuntu                    16.04       aefd7f02ae24   3 weeks ago        134MB
```

2) Modifying an Image

- Starting the container interactively with -it flag and /bin/bash
- Running ping in terminal
- Update software-list. Run apt-get update

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker run -it ubuntu:16.04 /bin/bash
root@7507bc61902c:/# ping
bash: ping: command not found
root@7507bc61902c:/# apt-get update
Get:1 http://security.ubuntu.com/ubuntu xenial-security InRelease [109 kB]
Get:2 http://archive.ubuntu.com/ubuntu xenial InRelease [247 kB]
Get:3 http://security.ubuntu.com/ubuntu xenial-security/main amd64 Packages [2051 kB]
Get:4 http://archive.ubuntu.com/ubuntu xenial-updates InRelease [109 kB]
Get:5 http://archive.ubuntu.com/ubuntu xenial-backports InRelease [107 kB]
Get:6 http://archive.ubuntu.com/ubuntu xenial/main amd64 Packages [1558 kB]
Get:7 http://security.ubuntu.com/ubuntu xenial-security/restricted amd64 Packages [15.9 kB]
Get:8 http://security.ubuntu.com/ubuntu xenial-security/universe amd64 Packages [984 kB]
Get:9 http://archive.ubuntu.com/ubuntu xenial/restricted amd64 Packages [14.1 kB]
Get:10 http://archive.ubuntu.com/ubuntu xenial/universe amd64 Packages [9827 kB]
Get:11 http://security.ubuntu.com/ubuntu xenial-security/multiverse amd64 Packages [8820 B]
Get:12 http://archive.ubuntu.com/ubuntu xenial/multiverse amd64 Packages [176 kB]
Get:13 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 Packages [2559 kB]
Get:14 http://archive.ubuntu.com/ubuntu xenial-updates/restricted amd64 Packages [16.4 kB]
Get:15 http://archive.ubuntu.com/ubuntu xenial-updates/universe amd64 Packages [1544 kB]
Get:16 http://archive.ubuntu.com/ubuntu xenial-updates/multiverse amd64 Packages [26.2 kB]
Get:17 http://archive.ubuntu.com/ubuntu xenial-backports/main amd64 Packages [10.9 kB]
Get:18 http://archive.ubuntu.com/ubuntu xenial-backports/universe amd64 Packages [12.7 kB]
Fetched 19.4 MB in 1min 42s (190 kB/s)
Reading package lists... Done
root@7507bc61902c:/#
```

- Installing the ping command

```

root@7507bc61902c:/# apt-get install iputils-ping
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libffi6 libgmp10 libgnutls-openssl127 libgnutls30 libhogweed4 libidn11 libnettle6 libp11-kit0 libtasn1-6
Suggested packages:
  gnutls-bin
The following NEW packages will be installed:
  iputils-ping libffi6 libgmp10 libgnutls-openssl127 libgnutls30 libhogweed4 libidn11 libnettle6 libp11-kit0 libtasn1-6
0 upgraded, 10 newly installed, 0 to remove and 6 not upgraded.
Need to get 1307 kB of archives.
After this operation, 3781 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu xenial/main amd64 libgmp10 amd64 2:6.1.0+dfsg-2 [240 kB]
Get:2 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 libnettle6 amd64 3.2-1ubuntu0.16.04.2 [93.7 kB]
Get:3 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 libhogweed4 amd64 3.2-1ubuntu0.16.04.2 [136 kB]
Get:4 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 libidn11 amd64 1.32-3ubuntu1.2 [46.5 kB]
Get:5 http://archive.ubuntu.com/ubuntu xenial/main amd64 libffi6 amd64 3.2.1-4 [17.8 kB]
Get:6 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 libp11-kit0 amd64 0.23.2-5-ubuntu16.04.2 [107 kB]
Get:7 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 libtasn1-6 amd64 4.7-3ubuntu0.16.04.3 [43.5 kB]
Get:8 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 libgnutls30 amd64 3.4.10-4ubuntu1.8 [548 kB]
Get:9 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 libgnutls-openssl127 amd64 3.4.10-4ubuntu1.8 [21.9 kB]
Get:10 http://archive.ubuntu.com/ubuntu xenial/main amd64 iputils-ping amd64 3:20121221-5ubuntu2 [52.7 kB]

```

- Rest of the downloaded package are not included in screenshot for simplification
- e. Using ping command

```

root@7507bc61902c:/# ping google.com
PING google.com (142.250.204.46) 56(84) bytes of data:
64 bytes from 142.250.204.46: icmp_seq=1 ttl=37 time=105 ms
64 bytes from 142.250.204.46: icmp_seq=2 ttl=37 time=92.5 ms
64 bytes from 142.250.204.46: icmp_seq=3 ttl=37 time=107 ms
64 bytes from 142.250.204.46: icmp_seq=4 ttl=37 time=106 ms
64 bytes from 142.250.204.46: icmp_seq=5 ttl=37 time=84.2 ms
64 bytes from 142.250.204.46: icmp_seq=6 ttl=37 time=112 ms
64 bytes from 142.250.204.46: icmp_seq=7 ttl=37 time=101 ms
64 bytes from 142.250.204.46: icmp_seq=8 ttl=37 time=105 ms
64 bytes from 142.250.204.46: icmp_seq=9 ttl=37 time=103 ms
64 bytes from 142.250.204.46: icmp_seq=10 ttl=37 time=97.3 ms
64 bytes from 142.250.204.46: icmp_seq=11 ttl=37 time=94.3 ms
^C
--- google.com ping statistics ---
11 packets transmitted, 11 received, 0% packet loss, time 10016ms
rtt min/avg/max/mdev = 84.250/101.091/112.916/7.829 ms

```

3) Committing Changes

- a. Check docker containers and see docker commit –help

```
C:\Users\Deil\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
7507bc61902c       ubuntu:16.04       "/bin/bash"        8 minutes ago       Exited (0) 5 seconds ago
c3ad4741d79c       ubuntu:16.04       "/bin/bash"        35 minutes ago      Exited (0) 33 minutes ago
4cb8ef93d8a4       ubuntu:16.04       "/bin/bash"        36 minutes ago      Exited (0) 36 minutes ago
c3a861fb92af       ubuntu:16.04       "/bin/echo 'Hello wo..." 40 minutes ago      Exited (0) 40 minutes ago
7aa09de2871b       docker101tutorial "/docker-entrypoint..." About an hour ago    Exited (0) About an hour ago
74cab11dfebb       alpine/git         "git clone https://g..." 2 hours ago         Exited (0) 2 hours ago

C:\Users\Deil\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker commit --help

Usage: docker commit [OPTIONS] CONTAINER [REPOSITORY[:TAG]]
       Committing Changes

Create a new image from a container's changes
    -a, --author string Author (e.g., "John Hannibal Smith new container"
    -c, --change list   Apply Dockerfile instruction to the created image
    -m, --message string Commit message
    -p, --pause         Pause container during commit (default true)

Options:
    -a, --author string Author (e.g., "John Hannibal Smith new container"
    -c, --change list   Apply Dockerfile instruction to the created image
    -m, --message string Commit message
    -p, --pause         Pause container during commit (default true)
```

b. Using docker commit

```
C:\Users\Deil\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker commit -a "David Elner" -m "Added ping utility." 7507bc61902c seancabalse/ping
sha256:9cd101b5af28dc44fc5510eb9b1f4f511d7b2120b2b4d5fb2c289cfe429f8e90
```

c. Run new image in new container

```
C:\Users\Deil\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
seancabalse/ping    latest             9cd101b5af28       40 seconds ago     169MB
docker101tutorial   latest             ed92b27e7580       2 hours ago        28MB
seancabalse/docker101tutorial latest             ed92b27e7580       2 hours ago        28MB
alpine/git          latest             2abeafdf5b9        3 days ago         25.1MB
ubuntu              16.04             aefd7f02ae24       3 weeks ago        134MB

Let's run the image in a new container and install the ping utility.
C:\Users\Deil\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker run -it --rm seancabalse/ping /bin/bash
root@d13a7ee6acd6:/# ping google.com
PING google.com (142.250.204.46) 56(84) bytes of data:
64 bytes from 142.250.204.46: icmp_seq=1 ttl=37 time=97.5 ms
64 bytes from 142.250.204.46: icmp_seq=2 ttl=37 time=94.5 ms
64 bytes from 142.250.204.46: icmp_seq=3 ttl=37 time=121 ms
^C
-- google.com ping statistics --
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 94.571/104.494/121.319/11.963 ms
root@d13a7ee6acd6:/#
```